

Appl. No. 10/065,908
Amdt. dated October 27, 2005
Reply to Office action of July 27, 2005

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

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Claim 1 (Currently Amended): A high density read-only memory (ROM) cell installed on a silicon substrate for storing data, comprising:

a drain doped region being of a second conductive type installed on the silicon substrate;

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a plurality of first heavily doped regions being of a first conductive type installed in the drain doped region;

a source doped region being of the second conductive type installed on the silicon substrate; and

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a gate installed on the surface of the silicon substrate and adjacent to the drain doped region and the source doped region;

wherein each of the plurality of heavily doped regions and the drain doped region form a diode[[]];

wherein each of the heavily doped regions is an individually programmable drain of the ROM cell.

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Claim 2 (Original): The ROM cell of claim 1 installed in a doped well being of the first conductive type on the silicon substrate.

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Claim 3 (Original): The ROM cell of claim 1 wherein the first conductive type is P-type, and the second conductive type is N-type.

Claim 4 (Original): The ROM cell of claim 1 wherein the first conductive type is N-type, and the second conductive type is P-type.

30 Claim 5 (Cancelled)

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Claim 6 (Previously Presented): A high density ROM cell installed on a silicon substrate for storing data, comprising:

- 5 a plurality of drain doped regions being of a second conductive type installed on the silicon substrate;
- a source doped region being of the second conductive type installed on the silicon substrate; and
- 10 a gate installed on the surface of the silicon substrate and adjacent to the plurality of drain doped regions and the source doped region, the gate having at least one extension structure respectively located between one of the plurality of drain doped regions and another drain doped region so that a plurality of drain signals respectively passing through the plurality of drain doped regions do not interfere with each other.

- 15 Claim 7 (Previously Presented): The ROM cell of claim 6 installed in a doped well being of a first conductive type on the silicon substrate.

 Claim 8 (Original): The ROM cell of claim 7 wherein the first conductive type is P-type, and the second conductive type is N-type.

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 Claim 9 (Original): The ROM cell of claim 7 wherein the first conductive type is N-type, and the second conductive type is P-type.

 Claim 10 (Original): The ROM cell of claim 6 wherein the second conductive type is N-type.

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 Claim 11 (Original): The ROM cell of claim 6 wherein the second conductive type is P-type.

30 Claim 12 (Cancelled)

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Claim 13 (New): A read-only memory (ROM) memory array installed on a silicon substrate, the memory array comprising a plurality of high density ROM cells, each ROM cell comprising:

- 5 a common gate installed on the surface of the silicon substrate;
 a common source of a first conductive type installed on the silicon substrate adjacent to the common gate; and
 a plurality of heavily doped drains of a second conductive type installed within a doped region of the first conductive type on the silicon
10 substrate, the doped region of the first conductive type being adjacent to the common gate.

Claim 14 (New): The memory array of claim 13 further comprising a plurality of bit lines connected to the plurality of ROM cells installed on the silicon substrate.

- Claim 15 (New): The memory array of claim 14 wherein a number of bit lines
15 connected to one of the plurality of ROM cells is equal to the number of heavily doped drains for said one of the plurality of ROM cells.

Claim 16 (New): The memory array of claim 15 wherein each of the heavily doped drains for said one of the plurality of ROM cells is connected to a different bit line.

- 20 Claim 17 (New): The memory array of claim 16 further comprising a switch connected to the plurality of bit lines for selectively accessing one of the heavily doped drains of said one of the plurality of ROM cells.

- Claim 18 (New): The memory array of claim 13 further comprising means of individually storing data or accessing data stored in each of the heavily doped
25 drains of one of the plurality of ROM cells utilizing the common gate and the common source of said one of the plurality of ROM cells.